

**CLAIMS:**

1. A method of determining a codec mode for encoding a frame in a communications system, the method comprising the steps of:

receiving a sequence of signal samples arranged in frames;

analyzing a current frame to select a codec mode appropriate for the current frame;

predicting characteristics of a subsequent frame using lookahead samples from the subsequent frame; and

determining a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on the predicted characteristics.

2. A method according to claim 1, wherein the step of predicting the characteristics uses lookahead samples which are stored for use in a subsequent signal encoding step.

3. A method according to claim 1, wherein the step of determining the codec mode comprises selecting one mode from a plurality of available modes of predefined bit rates.

4. A method according to claim 3, wherein the step of determining a codec mode comprises the step of selecting a high bit rate mode for the current frame and the subsequent frame in a situation where the codec mode appropriate for the current frame is a low bit rate codec mode.

5. A method according to claim 1, further comprising a step of detecting whether the communication system has limitations wherein a codec mode cannot be

changed for the subsequent frame and selectively using the determining step based on that detection.

6. A method according to claim 1, wherein the step of predicting the characteristics of a subsequent frame is carried out based on energy and frequency content of the lookahead samples.

7. A method according to claim 5, wherein the codec mode can be changed only in every other frame.

8. A method according to claim 3, wherein a codec mode can only be changed to an adjacent codec mode in said plurality of available modes.

9. A method according to claim 8, comprising the step of taking into account usage of codec modes when selecting a codec mode appropriate for the current frame in such a way as to limit use of the lowest bit rate mode and the highest bit rate mode.

10. A method of encoding a frame in a communications system, the method comprising the steps of:

receiving a sequence of signal samples arranged in frames;

analyzing a current frame to select a codec mode appropriate for a current frame;

predicting characteristics of a subsequent frame using lookahead samples which are stored for use in a subsequent signal encoding step;

determining a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on predicted characteristics; and

encoding the current frame and the subsequent frame using the determined codec mode.

11. A communications system arranged to receive and encode frames according to determined codec modes, the system comprising:

an input arranged to receive a sequence of signal samples arranged in frames;

an analyzer arranged to analyze a current frame to select a codec mode appropriate for the current frame;

a predictor arranged to predict characteristics of a subsequent frame using lookahead samples from the subsequent frame; and

a codec mode selector configured to select a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on predicted characteristics.

12. A communications system according to claim 11, wherein said communications system comprises a mobile communications network.

13. A system according to claim 11, wherein the analyzer, predictor and codec mode selector comprises a source based rate adaptation module in a multi-rate speed codec apparatus.

14. A system for determining a codec mode for encoding a frame, said system comprising:

receiving means for receiving a sequence of signal samples arranged in frames;

analyzing means for analyzing a current frame to select a codec mode appropriate for the current frame;

predicting means for predicting characteristics of a subsequent frame using lookahead samples from the subsequent frame; and

determining means for determining a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on the predicted characteristics.

15. A system for encoding a frame, said system comprising:

receiving means for receiving a sequence of signal samples arranged in frames;

analyzing means for analyzing a current frame to select a codec mode appropriate for a current frame;

predicting means for predicting characteristics of a subsequent frame using lookahead samples which are stored for use in a subsequent signal encoding step;

determining means for determining a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on predicted characteristics; and

encoding means for encoding the current frame and the subsequent frame using the determined codec mode.

16. A communications system arranged to receive and encode frames according to determined codec modes, said system comprising:

receiving means for receiving a sequence of signal samples arranged in frames;

analyzing means for analyzing a current frame to select a codec mode appropriate for the current frame;

prediction means for predicting characteristics of a subsequent frame using lookahead samples from the subsequent frame; and

selection means for selecting a codec mode for the current frame and the subsequent frame which suits the current frame and also suits the subsequent frame based on predicted characteristics.